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U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service

# QUANTITIES OF FRUITS USED IN THE MANUFACTURE OF JAMS, JELLIES, AND PRESERVES 1/

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Increasing quantities of agricultural products are being marketed in frozen form. What is the present and potential impact of this change upon agricultural marketing? Prior to any such evaluation, it is necessary to determine the relative size and nature of the major market outlets for frozen foods.

More than 65 percent of the 1953 frozen fruit and berry pack, excluding frozen juice concentrates, is in the large-size containers used by food manufacturers and the institutional trade. The bulk of this pack is consumed by preservers, pie bakers, ice cream manufacturers, restaurants, and cafeterias. This study of fruit use by preserve manufacturers is one of a series, to measure the relative size and nature of each of the major trade consumer of frozen fruits and berries.

A survey was conducted by the Agricultural Marketing Service on the quantities and form of fruit used in the preserving industry. Information was obtained from over 80 percent of the preserving firms in the United States by mail questionnaires and personal interviews. The jam, jelly, and preserve production from the remaining portion of the industry was obtained on a regional basis from the U. S. Department of Commerce. 2/ Estimates as to the form in which fruits were used by this nonreporting segment were made by applying regional ratios obtained from the survey to these figures. Total fruit use data in this survey represents over 90 percent of jam, preserve, and jelly production during 1953.

## How much fruit was used in jam, preserve, and jelly production during 1953?

It is estimated that over 300 million pounds of fruits and berries (fresh weight equivalent) were used in the manufacture of jams, preserves, and jellies during 1953. Over 68 percent of this amount was obtained as fruit--fresh, frozen, canned, and dried; about 32 percent was purchased as juice.

Table 1 shows estimated quantities of fruits used (fresh fruit equivalent) 3/ in the manufacture of jams, preserves, and jellies during 1953.

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1/ This is a preliminary report on several phases of "The Survey of Fruit Use by Preserve Manufacturers," which is being conducted by the Agricultural Marketing Service, U. S. Department of Agriculture. A full report of this study will be issued during the coming year. This report is based upon research conducted under the authority of the Agricultural Marketing Act of 1946 (RMA Title II).

2/ Regional composite data not revealing identity or output of any single firm.

3/ Including limited amounts for pie fillings, punch bases, fruit toppings, and other products manufactured by preservers.

Five fruits--strawberries, grapes, apples, blackberries, and peaches--accounted for over 70 percent of the fruits used. The next 5 fruits in importance--red and black raspberries, cherries, apricots, and pineapple--accounted for an additional 20 percent. Thus 10 fruits represented over 90 percent of the fruit used in jam, perserve, and jelly, manufacturing during 1953.

Table 1.- Estimated quantities of fruits used in the manufacture of jams, preserves, and jellies, 1953 1/

| Item | Equivalent fresh weight | Percentage of total |
|---|---|---|
| | 1,000 pounds | Percent |
| Strawberries | 67,411 | 22.33 |
| Grapes | 53,607 | 17.76 |
| Apples | 51,806 | 17.16 |
| Blackberries 2/ | 21,565 | 7.14 |
| Peaches | 21,017 | 6.96 |
| Red raspberries | 13,716 | 4.54 |
| Cherries | 13,384 | 4.44 |
| Apricots | 10,806 | 3.58 |
| Black raspberries | 8,954 | 2.97 |
| Pineapple | 11,372 | 3.77 |
| Currants | 6,745 | 2.23 |
| Red plums | 5,852 | 1.94 |
| Crabapple | 4,984 | 1.65 |
| Blueberries | 2,809 | .93 |
| Elderberries | 2,433 | .81 |
| Damson plums | 1,527 | .51 |
| Miscellaneous fruits and berries | 3,849 | 1.28 |
| Total or average | 301,837 | 100.00 |

1/ Preliminary
2/ Includes dewberries, boysenberries, youngberries, and loganberries

In what form were fruits received by preserve manufacturers?

Forty-five percent of the fruits used in jam, preserve, and jelly manufacture were received as frozen fruits. This compares with 14 percent fresh, 9 percent canned, and over 1 percent dried fruits. Almost 27 percent were received as nonfrozen juices and the remainder, 4 percent, was reported obtained as frozen juices. Table 2 shows the proportions of individual fruits and berries received in the various fruit forms.

More strawberries, blackberries, red raspberries, cherries, apricots, black raspberries, red plums, and blueberries were received as frozen fruit than in any other form. Of these, only cherries and apricots show frozen receipts at less than 50 percent of the total quantity of these fruits used in all forms.

Table 2.- Relative importance of form in which fruit is purchased for the manufacture of jams, preserves, and jellies, 1953 1/

| Fruits | Fruit form (fresh weight equivalent) | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Fruit | | | | Juice | | |
| | Frozen | Fresh | Canned | Dried | Frozen | Non-frozen | |
| | Percent | Percent | Percent | Percent | Percent | Percent | Percent |
| Strawberries | 84.28 | 12.51 | -- | -- | 1.73 | 1.48 | 100.00 |
| Grapes | 17.26 | 26.64 | 5.09 | 1.27 | 10.59 | 39.15 | 100.00 |
| Apples | 1.79 | 17.87 | .36 | 2.16 | -- | 77.82 | 100.00 |
| Blackberries 2/ | 78.81 | 9.74 | -- | -- | 4.41 | 7.04 | 100.00 |
| Peaches | 41.79 | 6.36 | 51.85 | -- | -- | -- | 100.00 |
| Red raspberries | 90.03 | 1.44 | -- | -- | 7.31 | 1.22 | 100.00 |
| Cherries | 72.77 | 7.73 | .06 | -- | 10.05 | 9.39 | 100.00 |
| Apricots | 39.35 | 14.43 | 35.49 | 10.73 | -- | -- | 100.00 |
| Black raspberries | 67.29 | 2.73 | .37 | -- | 8.54 | 21.07 | 100.00 |
| Pineapple | -- | -- | 79.40 | -- | -- | 20.60 | 100.00 |
| Currants | 33.05 | 1.53 | .61 | -- | 19.95 | 44.86 | 100.00 |
| Red plums | 73.19 | 22.27 | -- | -- | .15 | 2.39 | 100.00 |
| Crabapples | 2.79 | 7.68 | -- | -- | 3.75 | 85.78 | 100.00 |
| Blueberries | 94.05 | 5.95 | -- | -- | -- | -- | 100.00 |
| Elderberries | 15.41 | 27.25 | -- | -- | -- | 57.34 | 100.00 |
| Damson plums | 37.33 | 49.64 | -- | -- | -- | 13.03 | 100.00 |
| Miscellaneous fruits and berries | 5.79 | 23.33 | 10.06 | 27.62 | -- | 33.20 | 100.00 |
| Average | 44.96 | 14.15 | 8.99 | 1.33 | 4.13 | 26.44 | 100.00 |

1/ Preliminary
2/ Includes dewberries, boysenberries, youngberries, and loganberries.

Only damson plums were received primarily as fresh fruit. The canned form was predominant in peaches and pineapple. Nonfrozen juice is the leading form in which grapes, apples, currants, and elderberries were received.

The bulk of fresh fruits and berries used in preserving are consumed by firms located in the regions where these fruits are grown. It is evident that relatively very little fresh fruit for use in preserves was shipped outside of the producing region. Preservers located at a distance from individual fruit sources generally use fruits in frozen form, with the major exceptions of pineapple, peaches, and to a lesser extent apricots, where important volumes of the canned product are utilized. Considerable quantities of various fresh fruits and berries are juiced for jelly manufacture.

Concentrated apple juice is the dominant form for apples used in jelly manufacture. It is estimated that about 598,000 gallons of concentrated apple juice was used by the preserve industry.

How important is the preserve industry as a consumer of frozen fruits and berries?

Table 3 compares estimated quantities of frozen fruits used in the manufacture of jams, preserves, and jellies during 1953 with the total frozen fruit pack and the total pack in containers larger than 10 pounds for 1953. This comparison provides a working indicator as to the importance of the preserve industry as a market for frozen fruits and berries. It is not an absolute measure because portions of the fruit used by preservers in 1953 came out of 1952 pack as well as the 1953 frozen fruit pack.

Table 3.- Relative importance of the preserve industry as a market for frozen fruits and berries 1/

| Fruit | Frozen fruits used by preserve industry | 1953 Frozen Fruit Pack: Total | 1953 Frozen Fruit Pack: In containers over 10 pounds | Frozen fruit use by preservers as a portion of -- Total frozen pack | Frozen fruit use by preservers as a portion of -- Pack in large-sized containers |
|---|---|---|---|---|---|
| | 1,000 pounds--frozen weight | | | Percent | Percent |
| Strawberries | 57,794 | 225,963 | 104,008 | 25.6 | 55.6 |
| Grapes | 8,266 | 10,110 | 10,110 | 81.8 | 81.8 |
| Apples | 554 | 42,356 | 41,502 | 1.3 | 1.3 |
| Blackberries 2/ | 16,185 | 29,975 | 26,926 | 54.0 | 60.1 |
| Peaches | 7,842 | 32,171 | 13,553 | 24.4 | 57.9 |
| Red raspberries | 11,760 | 24,895 | 12,913 | 47.2 | 91.1 |
| Cherries 3/ | 9,739 | 116,981 | 113,563 | 8.3 | 8.6 |
| Apricots 4/ | 4,429 | 3,962 | 3,962 | 111.8 | 111.8 |
| Black raspberries | 5,738 | 8,975 | 8,975 | 63.9 | 63.9 |
| Currants | 1,889 | 3,794 | 3.794 | 49.8 | 49.8 |
| Red plums | 3,391 | 5/ | 5/ | 5/ | 5/ |
| Crabapples | 83 | 5/ | 5/ | 5/ | 5/ |
| Blueberries | 2,360 | 13,988 | 11,692 | 16.9 | 20.2 |
| Elderberries | 357 | 5/ | 5/ | 5/ | 5/ |
| Damson plums | 483 | 5/ | 5/ | 5/ | 5/ |
| Miscellaneous fruits and berries | 203 | 20,435 6/ | 4,931 | 22.1 | 91.6 |
| Total or average | 131,073 | 541,961 | 355,929 7/ | 24.2 | 36.8 |

1/ Preliminary
2/ Also dewberries, boysenberries, loganberries, and youngberries
3/ Red tart and sweet varieties
4/ Frozen fruit use reported by preservers includes some fruit frozen by preservers and not reported in commercial pack statistics
5/ Reported under miscellaneous fruits and berries
6/ Includes gooseberries
7/ Total frozen fruit pack not specified as packed in containers 10 pounds or less

Also, some frozen fruits used by preservers may not have been reported in the commercial frozen fruit pack statistics.

The total of frozen fruit used by preservers in 1953 is equivalent to 24.2 percent of the total 1953 commercial frozen fruit pack, and 36.8 percent of the quantity of frozen fruits and berries packed in containers larger than 10 pounds.

Frozen fruits packed in small containers are linked to the retail and institutional market. Because of inconvenient size, they are quite effectively prevented from moving into the food manufacturing market (preserve manufacturing, pie baking, and ice cream manufacturers). Preservers, in 1953, used quantities of frozen fruits equivalent to over 50 percent of the total institutional-sized pack of strawberries, grapes and pulp, blackberries, peaches, red and black raspberries, apricots and miscellaneous fruits and berries.

The preserve industry is a major factor in the marketing of all frozen fruits and berries except apples, cherries, and to a lesser extent, blueberries. Likewise it is evident that any changes in the total frozen fruit pack or in the overall demand for frozen fruits will have an impact upon the preserve industry.

What is the potential use of frozen fruits in the preserve industry?

The pattern of fruit use by the preserve industry, by fruit form, appears to be relatively stable. To the extent that future expansion of the preserve industry takes place in areas where fresh fruits are grown, fresh fruits may be used to a greater extent than the frozen form. Length of harvest period is also a consideration. For example, new strawberry varieties on the West Coast have increased the period when preserves can be manufactured from the fresh strawberry up to 6 or 8 months in California.

Preservers located away from fruit production areas are dependent upon frozen and canned fruits and juices. Price relationships and quality of finished product are factors in the choice of fruit form used by many of these preservers.

Potential use of individual frozen fruits by the preserve industry will be controlled, in part, by price relationships between the various fruit types, since the consumer appears to substitute readily one fruit jam for another when price differentials occur. This is reflected in the preserve manufacturer's fruit purchasing policy.

During the 5-year period from 1949 through 1953, certain trends in fruit use were evident. Increases in production of strawberry jams, and jams and jellies made from miscellaneous nonreported fruits 4/ accounted for over 80 percent of the total increase of jam, preserve, and jelly production taking place during that period. Production of grape, apples, blackberry, peach, currant, and crabapple products appeared to remain relatively stable or showed only slight increases. Only red raspberry and cherry products showed reductions during this 5-year period.

4/ Includes pineapple, apricot, black raspberries, plums, elderberries, and miscellaneous fruits and berries. See U. S. Department of Commerce fruit spread reports.

Year -to-year changes in fruit supply and price relationships limit the value of any estimates as to the future use of individual fruits in preserve manufacturing. However, trends in overall preserve production may be considered. These changes in total production, in turn, will be reflected into the demand for the various fruits.

During the period from 1948 through 1953, total jam, preserve, and jelly production appears to have been affected primarily by population change and the amount of spendable income in the hands of the average consumer. The population of the United States has been growing at the rate of about 1.5 percent each year. About 2.7 million consumers, actual or potential, were added to the market for jams and jellies during 1953. Per capita disposable income in 1953 was $1,544 or $301 higher than in 1949.

During the 6 years, 1948 through 1953, total jam and jelly production rose from 3.05 pounds to almost 3.66 pounds per person. An increase of 1 percent in the per capita production of jams and jelly appears to be closely related to an increase of 1.1 percent in per capita disposable personal income. In 1949, when disposable personal income fell, a drop in jam and jelly production was also reported. Figure 1 shows this relationship. It is estimated that increases in spendable personal income exerted about twice as much force as population growth in increasing the market for jams, preserves, and jellies between 1948 and 1953. 5/

In recent years, population increase and higher spendable incomes have both boosted the market for jams and jellies. This in turn has increased the demand for fruits and berries by the preserve industry. The 1953 preserve production, the latest reported, was the highest on record. Even though average spendable income may vary over time, the force exerted by population growth will be a powerful factor in maintaining a heavy demand for fruits by the preserve industry.

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5/ The present rate of population growth, about 1.5 percent a year, appears to increase the overall market for jams, preserves, and jellies, as much as a 1.65 percent change in disposable personal income alone.

*Per Person*

# PRODUCTION OF JAM, JELLY, & PRESERVES RELATED TO INCOME, 1948 - 53

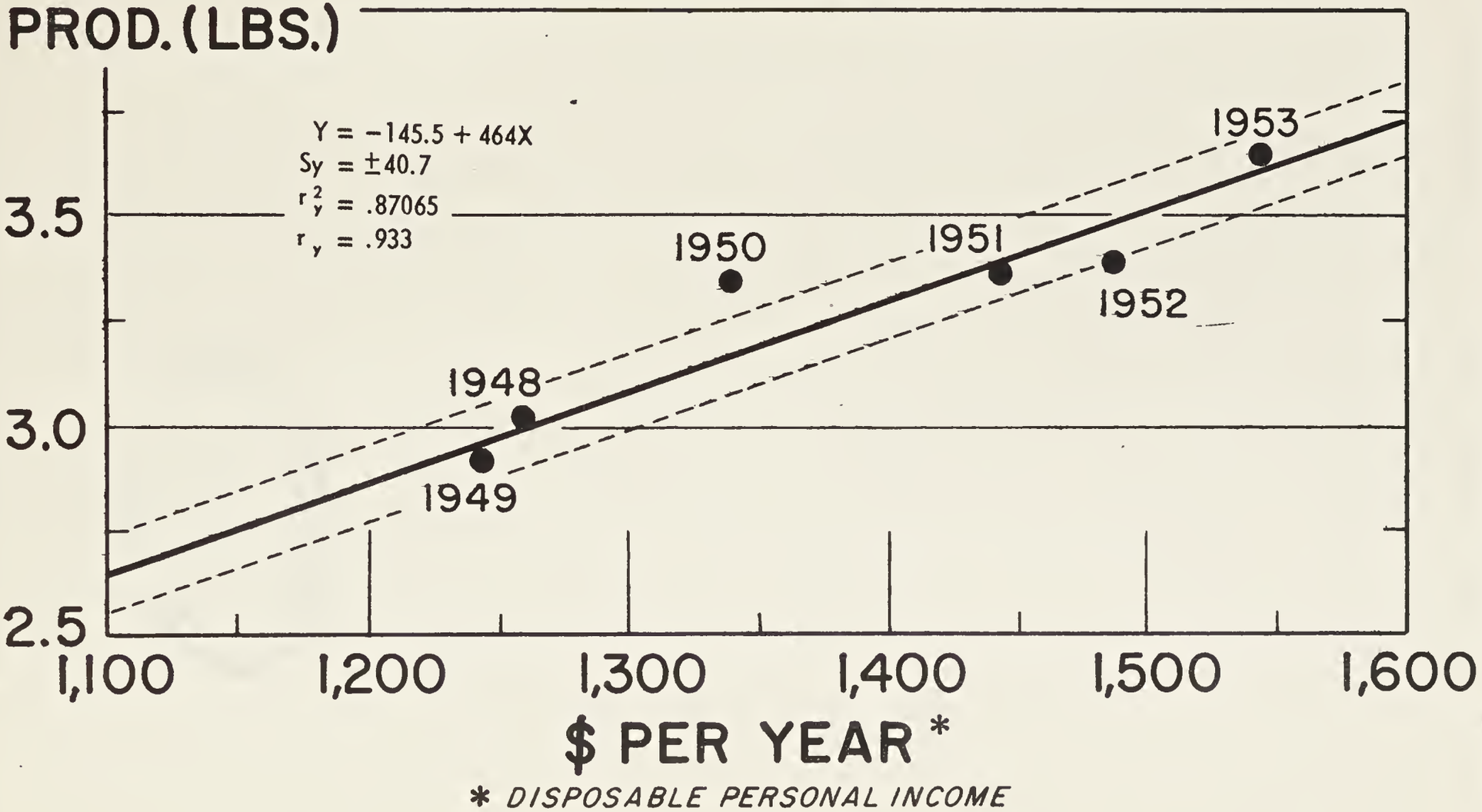


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Figure 1